

CLAIMS

What is claimed is:

1. A user equipment (UE) capable of receiving and transmitting communication signals in a time division duplex using code division multiple access format, the user equipment comprising:

means for receiving a primary code synchronization signal, the primary code synchronization signal received in a selected time slot out of a plurality of time slots in a primary code synchronization channel;

means for time synchronizing with a received timing of the primary code synchronization signal;

means for identifying secondary synchronization signals, the secondary synchronization signals received along with the primary code synchronization signal; and

means for determining an assigned code group and the selected time slot, based on the identified secondary synchronization signals; and

wherein the assigned code group is out of a predetermined number N of possible code groups, each combination of the N code groups and the selected time slot out of the plurality of time slots is associated with a unique combination of secondary signals from a set of secondary signals which does not exceed $(\log_2 N) + 1$ in number.

2. The UE of claim 1 wherein the identifying means comprises a plurality of matched filters, at least one matched filter is matched to each secondary synchronization signal out of the set of secondary synchronization signals.

3. The UE of claim 2 wherein the secondary signals are received on an in-phase or quadrature phase carrier and the plurality of matched filters having an in-phase and a quadrature phase matched filter for each secondary signal out of the set of secondary signals.

4. The UE of claim 2 wherein the UE accumulates results of the matched filters over a plurality of frames prior to determining the assigned code groups.

5. A user equipment (UE) capable of receiving and transmitting communication signals in a time division duplex using code division multiple access format, the user equipment comprising:

an antenna for receiving a primary code synchronization signal, the primary code synchronization signal received in a selected time slot out of a plurality of time slots in a primary code synchronization channel;

a plurality of matched filters for identifying synchronization signals, the secondary synchronization signals received along with the primary code synchronization signals; and

a processor for time synchronizing with a received timing of the primary code synchronization signals, and for determining an assigned code group and the selected time slot, based on the identified secondary synchronization signals; and

wherein the assigned code group is out of a predetermined number N of possible code groups, each selected time slot out of the plurality of time slots associated with a unique combination of secondary signals from a set of secondary signals which does not exceed $(\log_2 N) + 1$ in number.

6. The UE of claim 5 wherein at least one matched filter out of the plurality of matches filters is matched to each secondary synchronization signal out of the set of secondary synchronization signals.

7. The UE of claim 5 wherein the secondary signals are received on an in-phase or quadrature phase carrier and the plurality of matched filters having an in-phase and a quadrature phase matched filter for each secondary signal out of the set of secondary signals.

8. The UE of claim 5 wherein the UE accumulates results of the matched filters over a plurality of frames prior to determining the assigned code groups.